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IDAHO DEPARTMENT OF HEALTH & WELFARE

Bureau of Community and Environmental Health

Past Lead Exposure and Hypertension:
Information for Health Care Providers

What is the relationship between past lead exposure and hypertension?

Studies have shown that populations exposed to moderate to high levels of lead are at an increased risk of hypertension, both during the exposure and later in life. The mechanism may be related to lead's effects on calcium and calcium-related processes in the body, although other mechanisms have also been hypothesized. While increases in individual risk are relatively small, the impact on public health can be substantial by increasing the incidence of a condition that is already widespread in the general population. Elevated blood pressure also increases the risk for more serious conditions (most notably heart disease, stroke, and renal disease). Reduction of risk for these more serious conditions should be seen as the primary goal of hypertension treatment.

What is special about hypertension in lead-exposed patients?

Screening for hypertension in the general population is a well-recognized and beneficial public health practice. Screening is simple and inexpensive, and proper diagnosis and treatment can prevent more serious health problems.

Hypertension is multifactorial in cause. Lead exposure is best understood as one of many risk factors for the development of hypertension. For the lead exposed populations, their history of lead exposure means slightly increased risk over and above the risk for the general population. An additional reason for concern in this population is that when hypertension develops in lead-exposed patients, it is more likely due to, and/or can lead to, progressive renal disease.

The lead exposed population can especially benefit from hypertension screening and treatment, education on prevention and risk factor reduction, and vigilance for hypertension and related conditions. Health care providers should proactively monitor and educate their patients and treat aggressively for hypertension and associated risk factors.

Hypertension screening

There is an appropriate screening test (office sphygmomanometry) for hypertension. Office sphygmomanometry must be done by a trained person using the proper recommended technique. If an elevated reading of 140 systolic or 90 diastolic (or higher) is observed during a visit, the diagnosis of hypertension should be made only after elevated readings on two more additional visits over one to several weeks. Most public health organizations recommend screening at least once every two years for the general public. Patients with diastolic readings between 85 and 89 mm/Hg should be screened annually.

Suggestions for Hypertension Treatment in Lead-Exposed Patients

- Follow standard guidelines for treatment of hypertension.

- Consider using ACE (angiotensin converting enzyme) inhibitors or possibly calcium channel blockers for treatment in this population (if not contra-indicated), because of their positive effect on the kidneys.

- Recommend a calcium-rich diet and/or calcium supplementation (if not contraindicated), both for possible benefits in hypertension treatment and for helping to prevent the release of bone-stored lead.

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